REMARKS

Applicant is in receipt of the Office Action mailed August 14, 2007. Claims 1-39 are currently pending in the application.

35 U.S.C. § 103 Rejection:

Claims 1-39 were rejected under 35 U.S.C. 103(a) as being unpatentable over Chapuis et al. (U.S. Patent No. 7,049,798 B2, herein referred to as "Chapuis1") in view of Chapuis et al. (U.S. Patent No. 7,000,125 B2, herein referred to as "Chapuis2"). With respect to these claims, Applicant respectfully traverses this rejection.

The cited references taken separately or together do not teach or suggest all of the elements of previously presented claim 1.

Claim 1 recites:

> A power delivery management system, the system comprising:
>
> a plurality of digital power management devices, wherein each of the plurality of power management devices comprises a plurality of functions, wherein each of the plurality of power management devices is operable to provide power to one or more point of load devices; and
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> a control and communication bus, wherein each one of the plurality of digital power management devices is coupled to the control and communication bus;
>
> wherein each respective one of the plurality of digital power management devices includes a controller operable to control the functions of the respective digital power management device; and
>
> wherein the plurality of digital power management devices are operable to communicate with each other over the control and communication bus to exchange information to coordinate their functions.

The cited references taken together or separately do not teach or suggest a system in which a plurality of digital power management devices are operable to communicate with each other over the control and communication bus to exchange information to coordinate their functions. The Office Action disagrees with this assessment and argues that Applicant's previous arguments were not persuasive.

The Office Action argues that "coordinating functions" as recited in claim 1 is synonymous with "synchronizing" in order to present a particular order or sequence of events [functions] to carry out. However, the Office Action again fails to present specific support for this characterization from Chapuis1, Chapuis2, or Applicant's own specification. The term "synchronizing" has a well-understood meaning in the art, and it is clear that Chapuis1 uses the term accordingly when it states in column 2, lines 51-55 that "the bi-directional serial data bus is either a two-wire serial bus (e.g., I^2C) that allows data to be transmitted asynchronously or a single-wire serial data bus that allows data to be transmitted synchronously (i.e., synchronized to a clock signal)". One skilled in the art will readily recognize that "asynchronous data transfer" references data being transferred between devices without the use of a common clock signal, while "synchronous data transfer" refers to data being transmitted between devices using a common (synchronizing) clock signal. Data transmission is distinct from function coordination, the former pertaining to means of relaying information/data between endpoints, the latter pertaining to means of organizing and/or arbitrating the functions of interoperating and/or communicating devices and/or systems with respect to each other. While data transmission may in fact be a part of said coordinating of functions, it is not synonymous therewith. Chapuis2 references synchronous and asynchronous data transfer throughout, in each an every case within its intended meaning well understood in the art (and as described above – for example, see also Col. 6, lines 25-31, and claims 19 and 20). Accordingly, column 6, lines 36-52 merely state that a clock signal is used to synchronize devices, that is, to allow synchronous data transfer between these devices, and offers no teaching or specifics about coordinating functions of the devices.

Furthermore, the Office Action argues that nowhere does the claim recite the meaning or intention of what is done when functions coordinate. The claim recites power management devices, each of which comprises a plurality of functions and a controller

operable to control those functions. Applicant submits that the concept of coordinating those functions, in the context of the claim itself and Applicant's own specification does not require further elucidation, as one skilled in the art would readily recognize "coordinating functions" to pertain to organization and/or arbitration of the functions of the interoperating and/or communicating power management devices with respect to each other. In other words, a capability of the power management devices to coordinate their functions is indicative of the ability of a power management device to perform its functions not only independently of the other power management devices, but also informed and/or directed by how other power management devices perform their own respective functions. In addition, claims 4 and claim 22 include further limitations reciting specific functions, the coordination of which would equally be well understood by those skilled in the art. Furthermore, Applicant submits that the Present Application provides examples of the functions and of coordinating the functions, whether for a single POL regulator or for multiple POL regulators.

Therefore, Applicant respectfully submits that interpreting "coordinating functions" (recited in claim 1) to be synonymous with "synchronizing devices" (disclosed in column 6, lines 36-52 of Chapuis1) is not only incorrect in the context of the art of record, it is also not supported in either the Present Application or in Chapuis1 (and/or in Chapuis2). Applicant respectfully resubmits – in summary – that the concept of device synchronization is well known to those skilled in the art and is clearly distinct from the concept of coordinating functions as recited in claim 1 and also disclosed in the specification of the Present Application.

The Office Action again relies on Chapuis1 to argue that the POL regulators are exchanging information (cycles and a data bit) with each other via the controller (210). However, the Office Action does not show support in Chapuis1 of information being exchanged between the POL regulators. As Applicant has previously shown, Chapuis1 explicitly teaches throughout that information exchange takes place between the controller and any given one of the POL regulators, not between the POL regulators themselves. The Office Action has not provided examples of, and Applicant finds no support in Chapuis1 (or Chapuis2) for, information being sent by one POL regulator directly to another POL regulator. Still further, despite the contention made in the Office

Action, the Office Action has not provided examples of, and Applicant finds no support in Chapuis1 (or Chapuis2) for, information being sent by one POL regulator to the central controller, and that information being relayed by the central controller to any of the other POL regulators. "Exchanging information" implies information being relayed between the POL regulators, not merely from a POL regulator to a central controller. As taught in Chapuis1, information is exchanged between any given one of the POL regulators (220, 230, 240 and 250) and the power supply controller (210). In fact, Chapuis1 clearly teaches that it is the controller (210) that monitors the POL regulators in addition to each POL regulator potentially controlling its own functions independently of other POL regulators. This is in contrast to the POL regulators exchanging information to coordinate their functions as recited in claim 1. Therefore, the feature of digital power management devices exchanging information over the control and communication bus to coordinate their functions is missing from Chapuis1 (and Chapuis2), and is neither taught nor suggested by Chapuis1 (or Chapuis2).

In general, the Office Action again fails to provide specific teaching of information being exchanged between the POL regulators in Chapuis1. There is simply no teaching or suggestion in Chapuis1 of information from one POL regulator being relayed to another POL regulator, directly or through a controller. Applicant would also like to reiterate that the presence of the controller in the system disclosed by Chapuis1, taken together with the only method of transmitting information taught in figure 5, is indicative of Chapuis1 teaching away from a system configuration in which the POL regulators are enabled and configured to coordinate their functions, since such coordination is performed exclusively by the controller in the system of Chapuis1.

The Office Action has admitted that Chapuis1 does not explicitly disclose a plurality of digital power management devices that are operable to communicate with each other over the control and communication bus. Applicant would again like to point out that, as recited in claim 1, the digital power management devices are not merely operable to communicate with each other over the control and communication bus, but they are operable to do so to exchange information to coordinate their functions. Chapuis1 is very clear on the specific role of the controller in managing the system from a central location, whether the controller is configured outside or inside a POL regulator,

while each POL regulator is merely operable to control its own functions (see column 5, lines 47-58). The Office Action, however, argues that Chapuis2 clearly teaches that the "POL regulators communicate with each other over the current share interface" and a "synch/data line may be used to communicate synchronization information to permit phase interleaving of the POL regulators". Claim 1, however, recites a plurality of digital power management devices that are operable to communicate with each other over the control and communication bus to exchange information to coordinate their functions. It is clear from Chapuis2 that the current share interface is distinct and different from the control and communication bus. Therefore, the argument regarding the current share bus, which is distinct from the control and communication bus, and the transmission of synchronization information, which has been shown above to be completely distinct from coordinating functions, being sent over the synch/data bus is not relevant.

Further to the point, it is evident that the specification of Chapuis2 discloses distinct multiple buses coupling selected ones of the POL regulators to each other (in contrast to claim 1, which discloses a single control and communication bus), each bus in Chapuis2 serving a different function. In Figure 3 of Chapuis2, an intra-device interface is provided between individual ones of the POL regulators to enable current share, e.g., current share interface (CS1) provided between POL0 106 and POL1 108, and CS2 provided between POL4 112 and POLn 114 (see column 4, lines 45-49). Chapuis2 also discloses a controller (102) distinct from the POL regulators, which communicates with the POL regulators by writing and/or reading digital data via a serial bus, illustrated in FIG. 3 as the synch/data bus (see column 5, lines 1-5). In addition, Chapuis2 states that one of the functions of the system controller is fault management (one example of "coordinating functions" as disclosed in the Present Application), which is achieved through the system controller's communicating with the POL regulators over a second bus (OK/fault bus in figure 3) that is distinct from the synch/data bus (see column 5, lines 11-15). Thus this operation of Chapuis2 is simply not relevant to the present claims.

The passages of Chapuis2 cited by the Office Action to argue that the communication between the POL regulators disclosed in Chapuis2 reads on claim 1 are in fact descriptive of current sharing,. This current sharing is achieved not over the control and communication bus but over a dedicated current share interface which does

not couple all the POL devices together, merely pairs of POL devices, and which is used in addition to the control and communication (synch/data) bus that does couple all the POL devices together (see FIG. 3). It is clear from at least these teachings that the intra-device interfaces (CS1 and CS2) are therefore also clearly distinct from both the OK/fault bus and the synch/data bus, and that the current-share interfaces are not meant to be interpreted as comprising a control and communication bus. This is underlined by the fact that Chapuis2 clearly identifies the OK/fault bus and the synch/data bus as control and communication buses, and clearly identifies the current share interface as being specifically configured to allow POL regulators to operate in parallel to produce a single output voltage (see column 4, lines 45-57).

In accordance with the configurations described above, Chapuis2 teaches four different modes of operation, and specifically states that when the POL regulators operate as an array, the behavior of each POL regulator, and the array as a whole, are coordinated by a system controller (see column 7, lines 29-31). Furthermore, even in the presence of local control over certain functionality in addition to the central control performed by the controller, the system controller is still responsible for coordinating the functions of the POL regulators (see column 7, lines 40-45). It is therefore clear that Chapuis2 neither teaches, nor suggests a system in which a plurality of digital power management devices are operable to communicate with each other over a control and communication bus to exchange information to coordinate their functions.

In addition, information received by the POL regulators from sources other than the controller is disclosed by Chapuis1 as comprising fault monitoring data, which, as Chapuis1 also clearly indicates, originates from an external device or sense circuit corresponding to the given POL regulator (see figure 3-2, which discloses an example of the configuration of sense circuit 330), with the fault monitoring data containing information on the given POL regulator or its output (see column 5, lines 13-17). It is thus clear from the specification of Chapuis1, including the figures, that Chapuis1 teaches a central controller performing the monitoring of the POL regulators, and any coordination of the functions of the POL regulators (see also column 8, lines 18-33). Summarily, Chapuis1 provides no teaching or motivation for a plurality of digital power management devices that are operable to exchange information to coordinate their

functions, and teaches away from such a concept by the inclusion of a central controller required for monitoring the POL regulators.

Finally, Applicant respectfully submits that Applicant's previous statement in regards to the Office Action failing to show "how information between the POL regulators is exchanged" over the control and communications bus (in Chapuis1 and/or Chapuis2), did not pertain to the means of said exchange of information but the actual presence thereof. In other words, the Office Action did not provide examples or teachings in either Chapuis1 and/or Chapuis2 of POL regulators exchanging information with each other, whether through a controller or without. Furthermore, none of the alleged communication between POL regulators taught by Chapuis1 and/or Chapuis2 takes place over the control and communication bus.

For at least these reasons, Applicant submits that the combinations of features recited in claim 1 are not taught or suggested by Chapuis1 and/or Chapuis2, taken separately or together. In other words, whether taken singly or in combination, Chapuis1 and/or Chapuis2 do not teach, suggest or anticipate a system in which a plurality of digital power management devices are operable to communicate with each other over a control and communication bus to exchange information to coordinate their functions. Applicant also submits that since independent claim 1 has been shown to be patentably distinct, respective dependent claims 2-39 are also patentably distinct for at least the same reasons. Accordingly, Applicant respectfully requests removal of the 35 U.S.C. § 103(a) rejection.

CONCLUSION

In light of the foregoing amendments and remarks, Applicant submits the application is now in condition for allowance, and an early notice to that effect is requested.

If any extensions of time (under 37 C.F.R. § 1.136) are necessary to prevent the above-referenced application(s) from becoming abandoned, Applicant(s) hereby petition for such extensions. The Commissioner is hereby authorized to charge any fees which may be required or credit any overpayment to Meyertons, Hood, Kivlin, Kowert & Goetzel P.C., Deposit Account No. 50-1505/5900-00101/JCH.

Also filed herewith are the following items:

☐ Request for Continued Examination

☐ Terminal Disclaimer

☐ Power of Attorney By Assignee and Revocation of Previous Powers

☐ Notice of Change of Address

☐ Other:

Respectfully submitted,

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